WHAT IS CLAIMED IS

1. A method for separating an image signal into a set of image planes, the method comprising the operations of:

(a) searching, via a min-max module, for a minimum and a maximum within at least one window centered on a current pixel in the image signal;

(b) computing, via a dynamic threshold module, for the at least one window, based on the respective minimum and maximum received from the min-max module and the current pixel, a respective indicator representing the distance and direction of the current pixel relative to a respective threshold plane, and outputting a control signal based on the indicator;

(c) sub-sampling the image signal into a set of image planes; and

(d) separating the image signal into the set of image planes in accordance with the control signal by including a representation of the current pixel in at least one of the image planes, via a separation module.

2. The method of Claim 1 wherein the image signal comprises a luminance signal, a first chroma signal and a second chroma signal, and wherein operation (a) comprises the operations of:

searching for a luminance minimum and a luminance maximum in the luminance signal within the window;

indexing locations of the luminance maximum and luminance minimum within the window; and

outputting the luminance minimum, the luminance maximum, and values in the first and the second chroma signals that correspond to the locations of the luminance minimum and luminance maximum.

3. The method of Claim 2 wherein the operations of searching, indexing and outputting are performed for each window in a set of windows.

4. The method of Claim 1 wherein operation (a) comprises the operations of:

searching for a first minimum and a first maximum within a first window centered on the current pixel in the image signal, using a first min-max block, the first window corresponding to a first context; and

searching for a second minimum and a second maximum within a second window centered on the current pixel in the image signal, using a second min-max block, the second window corresponding to a second context wherein the second context is substantially larger than the first context.

5. The method of Claim 1 wherein an operation is performed on at least one window and wherein operation (b) comprises the operations of:

computing, for at least one window, a respective contrast vector;

computing, for at least one window, a bias vector and a dot product of the respective contrast vector and a respective thresholded pixel vector representing the current pixel thresholded by the bias vector, the dot product representing the respective indicator; and

outputting a control signal based on the respective indicators.

6. The method of Claim 5 wherein, for at least one window, the bias vectors represents the average between the respective maximum and minimum.

7. The method of Claim 5 wherein, for at least one window, the bias vector represents the average between a vector representing a lowpass filtered neighborhood of the current pixel and the average between the respective maximum and minimum.

8. The method of Claim 1 wherein operation (c) comprises the operations of:

receiving the control signal and producing a selector signal, using a selector module;

receiving the selector signal and producing a decision signal, using an edge processing module; and

receiving the image signal and the decision signal, and outputting a foreground signal and a background signal, using a foreground/background separation module, a representation of the current pixel of the image signal being included in at least one of the foreground signal and the background signal in accordance with the decision signal.

9. The method of Claim 8 wherein operation (c) further comprises the operations of:

receiving the foreground signal and the background signal;

filling undefined pixels in the foreground and background signals with values computed so as to substantially prevent artifacts and to facilitate good compression ratio; and

outputting a final foreground signal and a final background signal.

10. The method of Claim 9 wherein the operation of filling comprises:

extending content of defined pixels in each of the foreground and background signals to neighboring undefined pixels by filling neighboring undefined pixels with diluted foreground and background values, respectively, using a dilate module;

averaging non-zero content of the diluted foreground and background values over minimum coded unit blocks and outputting averaged block values, using a block average module; and

filling any remaining undefined pixels with the averaged block values, using a fill module.

11. A system for separating an image signal into a set of image planes, the system comprising:

(a) a min-max module receiving the image signal, searching for a minimum and a maximum within at least one window centered on a current pixel in the image signal;

(b) a dynamic threshold module, in communication with the min-max module, computing, for the at least window, based on the respective minimum and maximum received from the min-max module and the current pixel, a respective indicator representing the distance and direction of the current pixel relative to a respective threshold plane, and outputting a control signal based on the indicator; and

(c) a sub-sampling module for sub-sampling the image signal into image planes; and

(d) a separation module, in communication with the dynamic threshold module, separating the image signal into the set of image planes in accordance with the control signal by including a representation of the current pixel in at least one of the image planes.

12. The system of Claim 11 wherein the image signal comprises a luminance signal, a first chroma signal and a second chroma signal, and wherein the min-max module:

searches for a luminance minimum and a luminance maximum in the luminance signal within the window;

indexes locations of the luminance maximum and luminance minimum within the window; and

outputs the luminance minimum, the luminance maximum, and values in the first and the second chroma signals that correspond to the locations of the luminance minimum and the luminance maximum.

13. The system of Claim 12 wherein the min-max module searches for a minimum and maximum within each of a set of windows centered on the current pixel in the image signal.

14. An article of manufacture comprising:

a machine usable medium having program code embedded therein, the program code being used for separating an image signal into a set of image planes, the program code comprising:

(a) machine readable code to search for a minimum and a maximum within at least one window centered on a current pixel in the image signal;

(b) machine readable code to compute for the at least one window, based on the respective minimum and maximum and the current pixel, a respective indicator representing the distance and direction of the current pixel relative to a respective threshold plane, and to output a control signal based on the indicator; and

(c) machine readable code to separate the image signal into the set of image planes in accordance with the control signal by including a representation of the current pixel in at least one of the image planes.

15. An article of manufacture further comprising the operations of:

machine readable code for searching for a luminance minimum and a luminance maximum in the luminance signal within the window;

machine readable code for indexing locations of the luminance maximum and luminance minimum within the window; and

machine readable code for outputting the luminance minimum, the luminance maximum, and values in the first and the second chroma signals that correspond to the locations of the luminance minimum and luminance maximum.

16. The article of manufacture according to Claim 15, further comprising the operations of:

machine readable code for searching, indexing and outputting are performed for each window in a set of windows.

17. The article of manufacture according to Claim 15, further comprising the operations of:

machine readable code for computing, for at least one window, a respective contrast vector;

machine readable code for computing, for at least one window, a bias vector and a dot product of the respective contrast vector and a respective thresholded pixel vector representing the current pixel thresholded by the bias vector, the dot product representing the respective indicator; and

machine readable code for outputting a control signal based on the respective indicators.

18. The article of manufacture according to Claim 15, further comprising the operations of:

the bias vector represents the average between the respective maximum and minimum.

19. The article of Claim 15 wherein, for at least one window, the bias vector represents the average between a vector representing a lowpass filtered neighborhood of the current pixel and the average between the respective maximum and minimum.

20. The article of Claim 15 wherein operation (c) comprises the operations of:

receiving the control signal and producing a selector signal, using a selector module;

receiving the selector signal and producing a decision signal, using an edge processing module; and

receiving the image signal and the decision signal, and outputting a foreground signal and a background signal, using a foreground/background separation module, a representation of the current pixel of the image signal being included in at least one of the foreground signal and the background signal in accordance with the decision signal.